

Listing of Claims

1.(CURRENTLY AMENDED) hand held dental instrument for curing light-curable compounds curable in the mouth of a patient comprising:

a housing;

a plurality of solid state, light-emitting dies, each die including at least one generally bare semiconductor junction, mounted in a collective array in the housing, the array of dies operable for collectively emitting light having wavelengths within a narrow band of wavelengths and at a power to cure a dental compound;

a continuous clear lens layer ~~encapsulating~~ having at least one curved surface and contacting the array to extend in a continuous fashion over all of the dies of the array of dies, the curved surface operable for protecting the bare semiconductor junctions and directing and focusing light generated by the array; and

a light transmitting device for capturing said light from the array of dies and continuous ~~encapsulating~~ lens layer, and transmitting a beam of the light out of the housing to a work surface.

2.(ORIGINAL) The hand held dental instrument of claim 1 wherein said narrow wavelength band includes a blue light wavelength.

3.(ORIGINAL) The hand held dental instrument of claim 1 wherein said narrow wavelength band includes a wavelength of approximately 470 nanometers.

4.(ORIGINAL) The hand held dental instrument of claim 1 wherein said light transmitting device comprises at least one fiber optic element.

5.(ORIGINAL) The hand held dental instrument of claim 1 wherein said light transmitting device comprises a plurality of fiber optic elements operably coupled together for directing said beam.

6.(ORIGINAL) The hand held dental instrument of claim 1 wherein said light transmitting device has a receiving end and a transmission end, the transmission end being dimensioned smaller than said receiving end for narrowing the light beam captured by said light transmitting device.

7. (ORIGINAL) The hand held dental instrument of claim 1 further comprising a heat sink coupled to said array for directing heat away from the array.

8. (CURRENTLY AMENDED) hand held dental instrument for curing light-curable compounds curable in the mouth of a patient comprising:

a housing;

a plurality of solid state, light-emitting dies, each die including at least one generally bare semiconductor junction, mounted in a collective array in the housing, the array of dies operable for collectively emitting light having wavelengths within a narrow band of wavelengths and at a power to cure a dental compound;

a continuous clear lens layer encapsulating having at least one curved surface and contacting the array to extend in a continuous fashion over all of the dies of the array of dies, the curved surface operable for protecting the bare semiconductor junction and directing and focusing light generated by the array; and

the housing including a distal end and the array of light-emitting dies and lens layer being positioned proximate the distal end for transmitting light directly from the array to a compound to be cured.

9. (NEW) An instrument for curing dental compounds comprising:

a plurality of light-emitting elements formed from generally bare, light-generating semiconductor junctions mounted on a substrate, the light-emitting elements collectively emitting light in a narrow wavelength band suitable for curing a dental compound;

a continuous lens layer having at least one curved surface thereon, the layer contacting the substrate to extend in a continuous fashion over all of the light-emitting elements;

a light pipe having a receiving end proximate the light-emitting elements and lens layer to capture emitted light.